

AMENDMENTS TO THE CLAIMS

Claims 1-78 are pending.

Please amend claim 73.

No claims are canceled, or withdrawn.

The following listing of claims replaces all prior versions and listings of claims in the application.

1. (Original) In a distributed computing environment, a method for dynamically implementing workflow responsive to a directory object state change, the method comprising:

detecting a state change to an object in a directory; and

responsive to detecting the state change:

mapping the state change to the object to a workflow comprising a set of tasks; and

executing the tasks to achieve a desired state in the directory.

2. (Original) A method as recited in claim 1, wherein executing the tasks further comprises storing the desired state.

3. (Original) A method as recited in claim 1, wherein executing the tasks further comprises continuously executing an operation of a task of the tasks until convergence of the desired state is identified.

1 4. (Original) A method as recited in claim 1, wherein executing the
2 tasks further comprises storing a sequence of operations based on the tasks.

3
4 5. (Original) A method as recited in claim 1, wherein executing the
5 tasks further comprises storing information corresponding to one or more directory
6 objects to which the workflow applies.

7
8 6. (Original) A method as recited in claim 1, wherein executing the
9 tasks further comprises storing status information based on respective status of at
10 least one subset of the tasks.

11
12 7. (Original) A method as recited in claim 1, wherein mapping the state
13 change to the object further comprises evaluating the state change to the object
14 based on a declarative condition stored as a text string on an object instance of a
15 content class defined by the directory schema.

16
17 8. (Original) A method as recited in claim 1, wherein a task of the tasks
18 comprises any combination of a declarative condition or an operation that is stored
19 as a text string on an object instance of a content class defined by the directory
20 schema.

21
22 9. (Original) A method as recited in claim 1, wherein semantics of the
23 workflow are based on a workflow schema.

1 10. (Original) A method as recited in claim 1, wherein mapping the state
2 change to the object, semantics of the mapping are based on an event association
3 object schema.

4
5 11. (Original) A method as recited in claim 1, wherein executing the
6 tasks at least one subset of the tasks are executed with respect to one another based
7 on an order of execution relationship comprising a finish-start relationship, a
8 parallel execution relationship, a precedence constraint relationship, or a task
9 priority relationship.

10
11 12. (Original) A method as recited in claim 1, wherein executing the
12 tasks at least one subset of the tasks is executed with respect to one another based
13 on a precedence constraint relationship or a task priority relationship.

14
15 13. (Original) A method as recited in claim 1, wherein the method
16 further comprises:

17 monitoring a status corresponding to a task of the tasks;

18 storing the status on a status monitoring object; and

19 wherein a content class in the directory schema defines the status-
20 monitoring object.

21
22 14. (Original) A method as recited in claim 1, wherein the method
23 further comprises:

24 monitoring a set of directory resources affected by the workflow;

25 storing the directory resources on a status monitoring object; and

1 wherein a content class in the directory schema defines the status-
2 monitoring object.

3
4 15. (Original) A method as recited in claim 1, wherein the method
5 further comprises:

6 monitoring a status corresponding to an operation of the workflow;
7 determining that the status comprises a failure status;
8 responsive to the determining, taking a corrective action to advance the
9 workflow in view of the failure status; and

10 wherein a content class in the directory schema defines the status-
11 monitoring object.

12
13 16. (Original) A method as recited in claim 1, wherein executing the
14 tasks further comprises:

15 updating a status corresponding to a task in the workflow; and
16 responsive to the updating, evaluating the workflow to determine that a
17 next task of the tasks to be implemented.

18
19 17. (Original) A method as recited in claim 1, wherein the tasks
20 represent an inverse set of tasks that were previously performed as part of a
21 different workflow.

22
23 18. (Original) A method as recited in claim 1, wherein the tasks
24 implement a policy with respect to one or more directory resources, and wherein
25

1 mapping the state change to the object further comprises automatically
2 determining the workflow based on the policy.

3
4 19. (Original) A computer-readable medium comprising computer-
5 executable instructions for dynamically implementing workflow responsive to a
6 directory object state change, the computer-executable instructions comprising
7 instructions for:

8 detecting a state change to an object in a directory; and

9 responsive to detecting the state change:

10 mapping the state change to the object to a workflow comprising a set of
11 tasks; and

12 executing the tasks to achieve a desired state in the directory.

13
14 20. (Original) A computer-readable medium as recited in claim 19,
15 wherein the instructions for executing the tasks further comprise instructions for
16 storing the desired state.

17
18 21. (Original) A computer-readable medium as recited in claim 19,
19 wherein the instructions for executing the tasks further comprise instructions for
20 continuously executing an operation of a task of the tasks until convergence of the
21 desired state is identified.

22
23 22. (Original) A computer-readable medium as recited in claim 19,
24 wherein the instructions for executing the tasks further comprise instructions for
25 storing a sequence of operations based on the tasks.

1
2 23. (Original) A computer-readable medium as recited in claim 19,
3 wherein instructions for executing the tasks further comprise instructions for
4 storing information corresponding to one or more directory objects to which the
5 workflow applies.

6
7 24. (Original) A computer-readable medium as recited in claim 19,
8 wherein the instructions for executing the tasks further comprise instructions for
9 storing status information based on respective status of at least one subset of the
10 tasks.

11
12 25. (Original) A computer-readable medium as recited in claim 19,
13 wherein the instructions for mapping the state change to the object further
14 comprise instructions for evaluating the state change to the object based on a
15 declarative condition stored as a text string on an object instance of a content class
16 defined by the directory schema.

17
18 26. (Original) A computer-readable medium as recited in claim 19,
19 wherein a task of the tasks comprises any combination of declarative conditions
20 and operations that are stored as a text string on an object instance of a content
21 class defined by the directory schema.

22
23 27. (Original) A computer-readable medium as recited in claim 19,
24 wherein semantics of the workflow are based on a workflow schema.
25

1 28. (Original) A computer-readable medium as recited in claim 19,
2 wherein the instructions for mapping the state change to the object, semantics of
3 the mapping are based on an event association object schema.

4
5 29. (Original) A computer-readable medium as recited in claim 19,
6 wherein the instructions for executing the tasks, at least one subset of the tasks are
7 executed with respect to one another based on an order of execution relationship
8 comprising a finish-start relationship, a parallel execution relationship, a
9 precedence constraint relationship, or a task priority relationship.

10
11 30. (Original) A computer-readable medium as recited in claim 19,
12 wherein the instructions for executing the tasks, at least one subset of the tasks are
13 executed with respect to one another based on a precedence constraint relationship
14 or a task priority relationship.

15
16 31. (Original) A computer-readable medium as recited in claim 19,
17 wherein the computer-executable instructions further comprise instructions for:
18 monitoring a status corresponding to a task of the tasks;
19 storing the status on a status monitoring object; and
20 wherein a content class in the directory schema defines the status-
21 monitoring object.

22
23 32. (Original) A computer-readable medium as recited in claim 19,
24 wherein the computer-executable instructions further comprise instructions for:
25 monitoring a set of directory resources affected by the workflow;

1 storing the directory resources on a status monitoring object; and
2 wherein a content class in the directory schema defines the status-
3 monitoring object.
4

5 33. (Original) A computer-readable medium as recited in claim 19,
6 wherein the computer-executable instructions further comprises instructions for:
7 monitoring a status corresponding to an operation of the workflow;
8 determining that the status comprises a failure status;
9 responsive to the determining, taking a corrective action to advance the
10 workflow in view of the failure status; and
11 wherein a content class in the directory schema defines the status-
12 monitoring object.
13

14 34. (Original) A computer-readable medium as recited in claim 19,
15 wherein the instructions for executing the tasks further comprise instructions for:
16 updating a status corresponding to a task in the workflow; and
17 responsive to the updating, evaluating the workflow to determine that a
18 next task of the tasks to be implemented.
19

20 35. (Original) A computer-readable medium as recited in claim 19,
21 wherein the tasks represent an inverse set of tasks that were previously performed
22 as part of a different workflow.
23

24 36. (Original) A computer-readable medium as recited in claim 19,
25 wherein the tasks implement a policy with respect to one or more directory

1 resources, and wherein the instructions for mapping the state change to the object
2 further comprises instructions for automatically determining the workflow based
3 on the policy.

4
5 37. (Original) A computing device comprising:
6 a memory comprising computer-executable instructions for dynamically
7 implementing workflow responsive to a directory object state change; and
8 a processor coupled to the memory for executing the computer-executable
9 instructions, the computer-executable instructions comprising instructions for:
10 detecting a state change to an object in a directory; and
11 responsive to detecting the state change:
12 mapping the state change to the object to a workflow comprising a set of
13 tasks; and
14 executing the tasks to achieve a desired state in the directory.

15
16 38. (Original) A computing device as recited in claim 37, wherein the
17 instructions for executing the tasks further comprise instructions for storing the
18 desired state.

19
20 39. (Original) A computing device as recited in claim 37, wherein the
21 instructions for executing the tasks further comprise instructions for continuously
22 executing an operation of a task of the tasks until convergence of the desired state
23 is identified.
24
25

1 40. (Original) A computing device as recited in claim 37, wherein the
2 instructions for executing the tasks further comprise instructions for storing a
3 sequence of operations based on the tasks.

4
5 41. (Original) A computing device as recited in claim 37, wherein
6 instructions for executing the tasks further comprise instructions for storing
7 information corresponding to one or more directory objects to which the workflow
8 applies.

9
10 42. (Original) A computing device as recited in claim 37, wherein the
11 instructions for executing the tasks further comprise instructions for storing status
12 information based on respective status of at least one subset of the tasks.

13
14 43. (Original) A computing device as recited in claim 37, wherein the
15 instructions for mapping the state change to the object further comprise
16 instructions for evaluating the state change to the object based on a declarative
17 condition stored as a text string on an object instance of a content class defined by
18 the directory schema.

19
20 44. (Original) A computing device as recited in claim 37, wherein a task
21 of the tasks comprises any combination of one or more declarative conditions and
22 one or more operations represented by a text string stored on an object instance of
23 a content class defined by the directory schema.

1 45. (Original) A computing device as recited in claim 37, wherein
2 semantics of the workflow are based on a workflow schema.

3
4 46. (Original) A computing device as recited in claim 37, wherein the
5 instructions for mapping the state change to the object, semantics of the mapping
6 are based on an event association object schema.

7
8 47. (Original) A computing device as recited in claim 37, wherein the
9 instructions for executing the tasks, at least one subset of the tasks are executed
10 with respect to one another based on an order of execution relationship comprising
11 a finish-start relationship, a parallel execution relationship, a precedence constraint
12 relationship, or a task priority relationship.

13
14 48. (Original) A computing device as recited in claim 37, wherein the
15 instructions for executing the tasks, at least one subset of the tasks are executed
16 with respect to one another based on a precedence constraint relationship or a task
17 priority relationship.

18
19 49. (Original) A computing device as recited in claim 37, wherein the
20 computer-executable instructions further comprise instructions for:

21 monitoring a status corresponding to a task of the tasks;

22 storing the status on a status monitoring object; and

23 wherein a content class in the directory schema defines the status-
24 monitoring object.
25

1 50. (Original) A computing device as recited in claim 37, wherein the
2 computer-executable instructions further comprise instructions for:
3 monitoring a set of directory resources affected by the workflow;
4 storing the directory resources on a status monitoring object; and
5 wherein a content class in the directory schema defines the status-
6 monitoring object.

7
8 51. (Original) A computing device as recited in claim 37, wherein the
9 computer-executable instructions further comprises instructions for:
10 monitoring a status corresponding to an operation of the workflow;
11 determining that the status comprises a failure status;
12 responsive to the determining, taking a corrective action to advance the
13 workflow in view of the failure status; and
14 wherein a content class in the directory schema defines the status-
15 monitoring object.

16
17 52. (Original) A computing device as recited in claim 37, wherein the
18 instructions for executing the tasks further comprise instructions for:
19 updating a status corresponding to a task in the workflow; and
20 responsive to the updating, evaluating the workflow to determine that a
21 next task of the tasks to be implemented.

22
23 53. (Original) A computing device as recited in claim 37, wherein the
24 tasks represent an inverse set of tasks that were previously performed as part of a
25 different workflow.

1
2 54. (Original) A computing device as recited in claim 37, wherein the
3 tasks implement a policy with respect to one or more directory resources, and
4 wherein the instructions for mapping the state change to the object further
5 comprises instructions for automatically determining the workflow based on the
6 policy.

7
8 55. (Original) A computing device comprising processing means for:
9 detecting a state change to an object in a directory; and
10 responsive to detecting the state change:
11 mapping the state change to the object to a workflow comprising a set of
12 tasks; and
13 executing the tasks to achieve a desired state in the directory.

14
15 56. (Original) A computing device as recited in claim 55, wherein the
16 means for executing the tasks further comprise means for storing the desired state.

17
18 57. (Original) A computing device as recited in claim 55, wherein the
19 means for executing the tasks further comprise means for continuously executing
20 an operation of a task of the tasks until convergence of the desired state is
21 identified.

22
23 58. (Original) A computing device as recited in claim 55, wherein the
24 means for executing the tasks further comprise means for storing a sequence of
25 operations based on the tasks.

1
2 59. (Original) A computing device as recited in claim 55, wherein
3 means for executing the tasks further comprise means for storing information
4 corresponding to one or more directory objects to which the workflow applies.
5

6 60. (Original) A computing device as recited in claim 55, wherein the
7 means for executing the tasks further comprise means for storing status
8 information based on respective status of at least one subset of the tasks.
9

10 61. (Original) A computing device as recited in claim 55, wherein the
11 means for mapping the state change to the object further comprise means for
12 evaluating the state change to the object based on a declarative condition stored as
13 a text string on an object instance of a content class defined by the directory
14 schema.
15

16 62. (Original) A computing device as recited in claim 55, wherein a task
17 of the tasks comprises any combination of one or more declarative conditions and
18 one or more operations represented by a text string stored on an object instance of
19 a content class defined by the directory schema.
20

21 63. (Original) A computing device as recited in claim 55, wherein
22 semantics of the workflow are based on a workflow schema.
23
24
25

1 64. (Original) A computing device as recited in claim 55, wherein the
2 means for mapping the state change to the object, semantics of the mapping are
3 based on an event association object schema.

4
5 65. (Original) A computing device as recited in claim 55, wherein the
6 means for executing the tasks, at least one subset of the tasks are executed with
7 respect to one another based on an order of execution relationship comprising a
8 finish-start relationship, a parallel execution relationship, a precedence constraint
9 relationship, or a task priority relationship.

10
11 66. (Original) A computing device as recited in claim 55, wherein the
12 means for executing the tasks, at least one subset of the tasks are executed with
13 respect to one another based on a precedence constraint relationship or a task
14 priority relationship.

15
16 67. (Original) A computing device as recited in claim 55, further
17 comprising processing means for:

18 monitoring a status corresponding to a task of the tasks;

19 storing the status on a status monitoring object; and

20 wherein a content class in the directory schema defines the status-
21 monitoring object.

22
23
24 68. (Original) A computing device as recited in claim 55, further
25 comprising processing means for:

1 monitoring a set of directory resources affected by the workflow;
2 storing the directory resources on a status monitoring object; and
3 wherein a content class in the directory schema defines the status-
4 monitoring object.

5
6 69. (Original) A computing device as recited in claim 55, further
7 comprising processing means for:

8 monitoring a status corresponding to an operation of the workflow;
9 determining that the status comprises a failure status;
10 responsive to the determining, taking a corrective action to advance the
11 workflow in view of the failure status; and

12 wherein a content class in the directory schema defines the status-
13 monitoring object.

14
15 70. (Original) A computing device as recited in claim 55, wherein the
16 means for executing the tasks further comprise means for:

17 updating a status corresponding to a task in the workflow; and
18 responsive to the updating, evaluating the workflow to determine that a
19 next task of the tasks to be implemented.

20
21 71. (Original) A computing device as recited in claim 55, wherein the
22 tasks represent an inverse set of tasks that were previously performed as part of a
23 different workflow.

1 72. (Original) A computing device as recited in claim 55, wherein the
2 tasks implement a policy with respect to one or more directory resources, and
3 wherein the means for mapping the state change to the object further comprise
4 means for automatically determining the workflow based on the policy.

5
6 73. (Currently amended) A workflow enabled directory schema
7 comprising a plurality of base object content classes, the workflow enabled
8 directory schema:

9 a provisioning service content class to detect an event corresponding to a
10 state change in a directory object;

11 a workflow content class for storing a sequence of tasks; ~~tasks;~~;

12 an event association content class for storing declarative conditions to map
13 the state change to the directory object to an object instance of the workflow
14 content class; and

15 wherein the provisioning service content class is further configured to
16 execute the sequence of tasks corresponding to the object instance.

17
18 74. (Original) A workflow enabled directory schema as recited in claim
19 73, wherein at least a subset of the base object content classes comprise a
20 respective flexible attribute data field that indicates a data type, the data type being
21 used to express various operational or data providing properties of the flexible
22 attribute, the various operational or data providing properties being independent of
23 the data type and independent of any modification to the workflow enabled
24 directory schema.

1 75. (Original) A workflow enabled directory schema as recited in claim
2 73, wherein the sequence of tasks comprises any combination of a declarative
3 conditions and operations corresponding to directory-based objects.

4
5 76. (Original) A workflow enabled directory schema as recited by claim
6 73, further comprising a status monitoring content class for storing a status of an
7 object instance of the workflow content class.

8
9 77. (Original) A computer-readable medium comprising a workflow
10 enabled directory schema as recited in claim 73.

11
12 78. (Original) A computer comprising a computer-readable medium
13 comprising a workflow enabled directory schema as recited in claim 73.